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AF/IFW

RESPONSE UNDER 37 CFR 41.37
EXPEDITED PROCEDURE
EXAMINING GROUP 1771

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

EDGAR N. RUDISILL ET AL.

CASE NO.: SS2910USCNT1

SERIAL NO.: 10/762,721

GROUP ART UNIT: 1771

FILED: JANUARY 22, 2004

EXAMINER: NORCA LIZ TORRES-VELAZQUEZ

FOR: LOW OR SUB-DENIER NONWOVEN FIBROUS STRUCTURES

APPEAL BRIEF (REVISED) UNDER 37 C.F.R. §41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Order Returning Undocketed Appeal to Examiner, mailed 15 June 2006 as to the above-referenced application, Appellants submit the following revised Appeal Brief.

1. REAL PARTY IN INTEREST

The present application is assigned to E.I. du Pont de Nemours and Company, 1007 Market Street, Wilmington, Delaware 19898, said assignment being recorded at reel 8741, frame 0349.

2. RELATED APPEALS AND INTERFERENCES

The parent patent of the present application, U.S. Patent No. 5,885,909, was the subject of litigation in the U.S. District Court for the Middle District of Tennessee, Nashville Division, docket no. 3:03-848.

3. STATUS OF CLAIMS

Claims 76, 79, 81, 83, 86, 87, 89, 91, and 93–96 stand finally rejected in the present application.

4. STATUS OF AMENDMENTS

All amendments have been entered.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

In one embodiment, the present invention is directed to a thermally bonded nonwoven fabric comprising multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 10 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm. (Claim 76).

In another embodiment, the present invention is directed to a thermally bonded nonwoven fabric comprising multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 15 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm. (Claim 79).

Other embodiments of the present invention are directed to garments made from these fabrics. (Claims 83 and 86).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement.

2. Claims 81 and 87 stand rejected under 35 U.S.C. §§112, first paragraph as failing to comply with the enablement requirement.

3. Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §103(a) as obvious over Perkins et al. (U.S. Patent No. 5,178,932) in view of Potts et al. (U.S. Patent No. 5,145,727).

4. Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §103(a) as obvious over Ofosu et al. (U.S. Patent No. 6,268,302) in view of McAmish et al. (U.S. Patent No. 4,908,163).

7. ARGUMENT

It is noted that this application had been accorded "special status" by the Office in response to Appellants' petition due to the fact that there is an infringing product on the market.

Rejection under 35 U.S.C. §112, first paragraph (New Matter)

Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement, as the Examiner deems the latest amendment to claims 76, 79, 83 and 86 to contain "new matter".

The amendment at issue was filed 18 May 2005, and inserted the following negative limitation into the claims to further describe the fibers having cross-sectional areas of less than about 75 μm^2: "comprising polyolefin without a fluorocarbon additive".

At page 6 of the Final Office Action, the Examiner asserts that

> The negative limitation included in the present claims is considered new matter herein as there is no concept of exclusion of a fluorocarbon additive from the polyolefin forming the fibers taught by the specification. (Emphasis in original).

Appellants respectfully submit that the amendment to the claims does not represent new matter and is perfectly permissible under the patent law. In this regard, the Board's attention is directed to the MPEP at section 2173.05 (i), wherein it is stated:

> [A] lack of literal basis in the specification for a negative limitation may not be sufficient to establish a *prima facie* case for lack of descriptive support. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993).

In the present case, Appellants respectfully submit that the Examiner's determination that the amendment submitted herewith lacks basis is insufficient to establish a *prima facie* case for lack of descriptive support. The MPEP further states:

> Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977)... (Emphasis added).

The original disclosure (including the claims) clearly teaches two different alternatives for imparting liquid repellency to the fabric. One alternative is applying a repellent finish to the fibers. This is described in examples 1-37 in the spec. and in original claims 58 and 59. The other alternative is blending an additive into the fiber itself. This is described with respect to the sheath core embodiment on page 16 of the specification and generally in original claims 49-51. Claim 51 clearly establishes specific description of an embodiment wherein liquid repellency is provided to the fiber by blending a fluorocarbon additive into the fiber. As such, according to the Johnson court, Appellants may exclude that specific limitation from the claims. It is

further noted that the currently rejected claims require at least one fiber layer have a repellent fluorocarbon finish.

At page 3 of the Final Office Action, the Examiner argues that the concept of the exclusion of fluorocarbon additives in the polymer fibers is not supported in the present specification by directing attention to Examples 1-37 of the application (page 10), wherein Appellants disclose the application of a repellent finish on PET fibers of those examples. Appellants submit that the Examiner appears to have missed the distinction between incorporating an "additive" into the polymer of the fiber (original claims 49-51), in which process the additive is added to the polymer prior to spinning the fibers, and finishing the fabric with a repellent finish composition (original claims 58 and 59), wherein the already-formed fibers/webs are coated with a finishing material. In the case of Examples 1-37, Appellants used an after-applied finish solution to impart repellency to the fabrics, rather than incorporating a fluorocarbon additive into the polymeric fibers themselves. This is contrary to the Examiner's contention that there is no concept of exclusion of fluorocarbon additives within the fiber polymer itself. Clearly, if one was to provide a fluorocarbon finish to the fiber, one of ordinary skill in the art would expect that a fluorocarbon additive was not already blended into the fiber, since repellency is provided by the finish. Thus, the cited examples provide clear support that Appellants were in possession of the concept of excluding a fluorocarbon additive, blended into the polymer.

As such, according to MPEP 2173.05 (i) and In re Johnson, these alternatives may be excluded without adding "new matter", as both inclusion and exclusion of the same are fully described. Withdrawal of the rejection is requested.

Rejection under 35 U.S.C. §112, first paragraph (Enablement)

Claims 81 and 87 stand rejected under 35 U.S.C. §§112, first paragraph as failing to comply with the enablement requirement. The Examiner disagrees with Appellants' position that the inclusion of a meltblown fiber layer in the present invention is fully within the scope of enablement of the specification (Final Office Action, pages 3 (b) and 6).

Appellants submit that the incorporation of a meltblown fiber layer into nonwoven fabrics to increase hydrostatic head barrier properties is so well-known in

the art that a specific recitation of such an embodiment is unnecessary in the application.

> "A patent need not disclose what is well known in the art." In re Wands, 858 F.2d 731, 735, 8 USPQ2d 1400, 1402 (Fed. Cir. 1988).

In this regard, the Board's attention is directed to the fact that Appellants describe SMS (spunbond/meltblown/spunbond) fabrics as conventional in the art (page 2, lines 1-17). Likewise, a plethora of references of record herein, including those cited by the Examiner, disclose incorporating a meltblown fiber layer into composite nonwoven fabrics.

The Examiner argues that the present disclosure "teaches away" from the inclusion of a meltblown layer (Final Office Action, bottom of page 3). The fact that Appellants teach that in most cases reinforcement with a meltblown layer is not required, certainly does not mean that one of ordinary skill in the art would not know how to make and use a fabric that did contain a meltblown layer. Obviously, if meltblown layers were well-known in the art then one skilled in the art would, without undue experimentation, know how to incorporate meltblown layers into the fabric.

Appellants are not limited to only preferred embodiments, thus the Examiner's contention that the present disclosure teaches away from the inclusion of a meltblown layer is both mischaracterized and irrelevant. Even if the disclosure did teach away from the inclusion, if one of ordinary skill in the art would recognize how to incorporate the meltblown layers into the fiber, then the claims are enabled. This is the case as evidenced by the well-known nature of meltblown layers as admitted by the Examiner.

Accordingly, Appellants submit that the inclusion of a meltblown fiber layer in the present invention is fully described within the specification-as-filed, especially in view of the prior art known as of the effective filing date of the present application, and as such claims 81 and 87 are fully enabled. Withdrawal of the rejection is requested.

Rejection under 35 U.S.C. § 103(a) over Perkins et al. in view of Potts et al.

Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §103(a) as obvious over Perkins et al. (U.S. Patent No. 5,178,932) in view of Potts et al.

Appellants essentially agree with the Examiner's characterization of the teachings of Perkins et al. as set forth at item 4 of the Office Action issued 8 April 2005 (pp. 4-6). However, Perkins et al. disclose SMS fabrics that invariably contain a fluorocarbon additive in the meltblown layer thereof.

> The microfibers of the second nonwoven web are prepared from a mixture of an additive and a second thermoplastic polymer, which additive imparts alcohol repellency to the surfaces of the microfibers. (Abstract)...
>
> Alcohol-repellent additives typically are fluorine-containing materials. Examples of fluorine containing materials are the following: (col. 7, lines 55-57).

Perkins et al. then disclose a number of suitable, fluorine-containing additives "A" through "M" at column 7, line 59, bridging to col. 8, line 68, all of which are fluorocarbons. No other "alcohol-repellent" additives are disclosed or suggested by Perkins et al. and accordingly, Perkins et al. is not enabling for any other "alcohol-repellent" additives besides fluorocarbon additives.

According to the present claims, the polyolefin used to spin the fibers having cross-sectional areas of less than about 75 μm^2 does not contain a fluorocarbon additive. Perkins et al. provide no motivation to exclude fluorocarbon additives from their meltblown layers and as such cannot be said to have made obvious the present claims; and since the addition of fluorocarbon additives to the polymers of Perkins et al.'s meltblown fibers is central to their invention, to exclude those additives would destroy the desired function of the Perkins et al. invention. As such, the skilled artisan would not have been motivated to so modify Perkins et al.

In an effort to supplement the disclosure of Perkins et al., Examiner directs attention to Potts et al., specifically to Combination 3-9 (col. 17, lines 37-43), which discloses a three-layered SMS fabric in which the spunbond layers (31 and 34) contain an alcohol-repellent additive (in contrast to the finish applied to at least one of the presently claimed hard yarn, meltspun, nonwoven layers), and the meltblown

layer (32) is not disclosed to contain an additive. The Examiner argues that it would have been obvious to modify the structure of Perkins et al. to provide it with a middle meltblown layer without a fluorocarbon additive "with the motivation of providing suitable constructions for medical fabrics as disclosed by Potts et al." (Final Office Action, page 10). The Examiner notes that Potts et al. is the parent application of Perkins et al. (Final Office Action, page 9, penultimate line).

Interestingly, Perkins et al. refer to the inventions of Potts et al., wherein the patentees state:

> The multilayered structures described in such parent application [Potts et al.] possess various distinct advantages over earlier structures. It subsequently was unexpectedly discovered, however, that not all combinations of fiber surface characteristics performed equally well. This was particularly true for three-layer nonwoven composite structures where the center layer contained an additive which imparted alcohol repellency to the fibers thereof and both alcohol repellency and electrostatic charge dissipation were desired for the composite structure. (Col. 1, lines 24-34; emphasis added).

As set forth above, Perkins et al. is directed to composite nonwoven fabrics which invariably have a fluorocarbon additive within the polymer of the meltblown fibers, and thus it would appear that Perkins et al., especially in view of the quotation above, deems this formulation to represent an advance in the art over their parent application, Potts et al.

As argued above, to modify Perkins et al. in the manner suggested by the Examiner so as to exclude such fluorocarbon additives from the meltblown layer would destroy the stated improvement of the Perkins et al. invention. Further, the quotation from Perkins et al. above represents an express teaching away from the very modification proposed by the Examiner, i.e. to exclude fluorocarbon additives from the melt blown layer according to the teachings of Potts et al.

As such, the skilled artisan would not have been motivated to so modify Perkins et al., even in view of Potts et al.

Withdrawal of the rejections over Perkins et al. in view of Potts et al. is respectfully requested.

Rejection under 35 U.S.C. §103(a) over Ofosu et al. in view of McAmish et al.

Claims 76, 79, 81, 83, 86, 87, 91, and 93-96 stand rejected under 35 U.S.C. §103(a) as obvious over Ofosu et al. (U.S. Patent No. 6,268,302) in view of McAmish et al. (U.S. Patent No. 4,908,163). Appellants traverse this basis of rejection and respectfully request reconsideration and withdrawal thereof.

Appellants reiterate their comments in traverse of the rejection over Ofosu et al. in view of McAmish, as set forth in their previous responses, and in their initial comments in the Request for Continued Examination, filed March 30, 2005. To summarize, Appellants pointed out that Ofosu et al. disclose a multilayer laminate of fiber webs made from two different polyolefin polymers that have different melt flow rates (MFR), one having an MFR below 50g/10 min and the other having an MFR above 50g/10 min (col. 1, lines 40-47). In order to differentiate the MFRs of the polymers, Ofosu et al. disclose adding up to 1000 ppm of peroxide and up to 5 wt% of a catalyst to a low MFR polyolefin, so as increase "the melt flow rate of the polymer by a factor of at least two" (col. 1, lines 53-58).

In contrast thereto, the presently claimed invention expressly requires multiple fiber layers made of the same, single polymer, such as disclosed in Examples 41 and 42 of the present application, wherein identical plies of polypropylene fabrics of Examples 38-40 are combined (pages14-15).

McAmish was merely cited for the proposition that it is known in the art to apply a fluorochemical coating to a nonwoven fabric, but McAmish in no way compensates for the failure of Ofosu et al. to disclose or suggest the use of multiple fiber layers made of the same, single polymer. Thus, the combination of Ofosu et al. and McAmish fails to make out a proper, *prima facie* case of obviousness.

In response to Appellants' arguments, the Examiner asserts that, in spite of the fact that Ofosu et al. clearly disclose the use of polypropylenes having differing melt flow rates, the polypropylene polymers of Ofosu et al. are "the same, single polymer" and as such are within the scope of the present claims. In support of her arguments, the Examiner states:

> [T]he polypropylene polymers used by the Ofosu reference do read on the term "same, single polymer" in the context described by Appellants' Specification in which the polymer would be readily

> recycled back to constituent monomer...The fact that Ofosu et al. uses polypropylene with different melt-flow rate[s] in the different layers does not make the material different from the "same, single polymer" as defined in the present invention since the constituent monomer of polypropylene is propylene regardless of the melt-flow rate of the polymer. (Office Action, page 3).

Appellants traverse the Examiner's findings for several reasons. While Appellants express a preference for use of the same, single polymer such that the medical fabrics formed therefrom can be recycled into constituent monomer, as cited by the Examiner, Appellants respectfully submit that those skilled in the recycling art (which the present inventors are not) would know that polyolefins are not broken down into their constituent monomers for recycling. The constituent monomers of, for example, polyethylene and polypropylene are ethylene and propylene respectively, both gases, the formation of which from polymer would be energy- and cost-prohibitive, thus eliminating the incentives for recycling, even if it would be possible to completely break down those polymers to their constituent monomers. As evidence to support their argument, Appellants direct the Board's attention to "Plastics Recycling: What makes sense?" from E.B. Nauman & Associates (**www.ebnauman.com/recycle1.htm**) (at 9.1, Evidence Appendix), which states:

> Pyrolysis is a process for decomposing plastics, in the absence of air, into usable gases, oils, and coke...The economics are terrible as is the energy efficiency. Those readers familiar with the petrochemical industry will recognize that cracking natural gas liquid is easier than cracking naptha, that cracking crude is not fully commercial and that cracking plastics is an abomination. Better they be burned! (E.B. Nauman, page 1 of 2; emphasis added).

Instead, polyolefins are generally recycled as polymer, and not broken down to their constituent monomers.

> Plastics recycling can take two forms: the reclaimed plastics can be used for applications not typical of virgin plastics or they can replace virgin plastics. The first form has not been an economic success, although new, high-value applications may yet be found. The second form is the only valid one for an environmentalist. Recycled plastics must displace virgin polymers. To do this they must have properties that closely approach those of virgin polymers and have prices less than those of virgin polymers. This has proven a difficult but not

> impossible goal. (E.B. Nauman, page 1, bridging to page 2; emphasis added).

E. B. Nauman continues by listing the required characteristics for recycling plastics:

- They should be free from point-to-point variations in molecular weight.
- The average molecular weight should be controllable. (Page 2).

Those skilled in the art are well aware that a polymer's molecular weight is proportional to its melt-viscosity. As evidence in support of this position, Appellants submit herewith (at 9.2, Evidence Appendix) a partial copy of "Packaging Materials: 3. Polypropylene as a Packaging Material for Foods and Beverages", Philip Tice, © 2002 International Life Sciences Institute, pp 5-6; **http://europe.ilsi.org/file/3-RPPM3Polyprop.pdf**), which discusses different grades of polypropylene and indicates:

> Melt-viscosity, which correlates with the weight-average molecular weight of the polymer, is used to select the grade appropriate for the specific process. Standardised melt-flow rate (MFR) tests are normally used to provide the information. Polymer grades with low MFR values (high molecular weight) are used in sheet extrusion, for subsequent thermoforming processing and also for blow moulding. Films are manufactured from intermediate grades, and grades with the higher MFR values are used for injection moulding (citations omitted). (Page 6, bottom).

Additionally, melt flow index is indicated as being a "key characteristic when setting mould flow conditions" for recycled polypropylene (The Consortium for Automotive Recycling and The British Plastics Federation, Recycled Plastic Specification – Generic Family A: Polypropylene, Derek Williams, April 28, 2000; fourth page (indicated pagination from www incorrect); **http://www.caregroup.org.uk/ppspec.pdf**; copy attached at 9.3, Evidence Appendix).

Finally, further evidence of the distinction between different melt-flow rate polymers is provided at **http://www.rco.on.ca/factsheet/fs_g03.html** ("Recyclable Materials: Recycling Tubs & Lids – 1994"; The Recycling Council of Ontario; copy attached at 9.4, Evidence Appendix), which states:

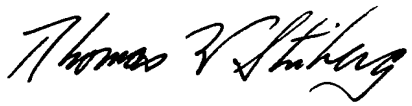
> To ensure recycled resin quality when recycling plastic, it is crucial that resin types with different molecular structures or viscosities not be mixed. (Page 1, fifth paragraph, emphasis added).

Accordingly, it is clear that those skilled in the art of plastics recycling do not consider polypropylenes having differing melt-viscosities to be recyclable together, in contrast to the Examiner's arguments to the contrary.

As such, Appellants respectfully submit that the polypropylenes having different melt flow rates described in Ofosu et al., are not "the same, single polymer" for the purposes of the present claims, nor for the purpose of recycling, as proposed by the Examiner. Withdrawal of the rejection over Ofosu et al. in view of McAmish et al. is requested.

For the foregoing reasons, Appellants earnestly solicit withdrawal of the rejections and allowance of the claims.

Respectfully submitted,



THOMAS W. STEINBERG
ATTORNEY FOR APPELLANT
Registration No.: 37,013
Telephone: (302) 892-0887
Facsimile: (302) 892-7343

Dated: 6/26/06

TWS:fgl
Enclosures:

8. Claims Appendix
9. Evidence Appendix (9.1-9.4)
10. Related Proceedings Appendix

8. CLAIMS APPENDIX

Claims 1-75 (cancelled).

76. A thermally bonded nonwoven fabric comprising multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 10 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm.

77. (Canceled).

78. (Canceled).

79. A thermally bonded nonwoven fabric comprising multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 15 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm.

80. (Canceled).

81. The thermally bonded nonwoven fabric of claim 76 or 79, wherein two nonwoven layers of hard yarn meltspun polyolefin spunbond fibers are bonded to opposite sides of a nonwoven layer of meltblown polyolefin fibers having cross-sectional areas of less than about 75 μm^2.

82. (Canceled).

83. A garment comprising a thermally bonded nonwoven fabric having multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 10 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm.

84. (Canceled).

85. (Canceled).

86. A garment comprising a thermally bonded nonwoven fabric having multiple nonwoven layers which are made of hard yarn meltspun polyolefin fibers and which are constituted of the same, single polymer, and at least one nonwoven layer of fibers comprising polyolefin without a fluorocarbon additive having cross-sectional areas of less than about 75 μm^2, and wherein at least one hard yarn meltspun nonwoven layer has a repellent fluorocarbon finish, said fabric having a basis weight between about 13-125 g/m^2, a grab tensile strength in both the machine- and cross-directions at least about 1 $N/(g/m^2)$, normalized for basis weight, and a combination of Frazier permeability at least about 15 and up to about 30 $m^3/min\text{-}m^2$ and hydrostatic head between about 75 and 99 cm.

87. The garment of claim 83 or 86, wherein two nonwoven layers of hard yarn meltspun polyolefin spunbond fibers are bonded to opposite sides of a nonwoven layer of meltblown polyolefin fibers having cross-sectional areas of less than about 75 μm^2.

88. (Canceled).

89. The thermally bonded nonwoven fabric of claim 76 or 79, which has a hydrostatic head between about 80 and 99 cm.

90. (Canceled).

91. The garment of claim 83 or 86, wherein said thermally bonded nonwoven fabric has a hydrostatic head between about 80 and 99 cm.

92. (Canceled).

93. The thermally bonded nonwoven fabric of claim 76 or 79, which has a cross sectional void percentage of at least about 85 percent.

94. The garment of claim 83 or 86, wherein the thermally bonded nonwoven fabric has a cross sectional void percentage of at least about 85 percent.

95. The thermally bonded nonwoven fabric of claim 76 or 79, wherein said at least one nonwoven polyolefin layer comprising fibers having cross-sectional areas of less than about 75 μm^2 comprises fibers having cross-sectional areas in the range from about 6 to about 54 μm^2.

96. The garment of claim 83 or 86, wherein said at least one nonwoven polyolefin layer comprising fibers having cross-sectional areas of less than about 75 μm^2 comprises fibers having cross-sectional areas in the range from about 6 to about 54 μm^2.

9. EVIDENCE APPENDIX

Attached hereto are copies of the following documents submitted with Appellants' response filed 18 May 2005, and indicated as having been considered by the Examiner in the Final Office Action, page 5.

9.1. "Plastics Recycling: What makes sense?" from E.B. Nauman & Associates.

9.2. "Packaging Materials: 3. Polypropylene as a Packaging Material for Foods and Beverages", Philip Tice, © 2002 International Life Sciences Institute, pp 5-6.

9.3. The Consortium for Automotive Recycling and The British Plastics Federation, Recycled Plastic Specification – Generic Family A: Polypropylene, Derek Williams, April 28, 2000; page 4.

9.4. "Recyclable Materials: Recycling Tubs & Lids – 1994"; The Recycling Council of Ontario.

9.1

(Emphasis added)

E. B. Nauman & Associates

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PLASTICS RECYCLING: WHAT MAKES SENSE?

Plastics are a highly visible component of trash. They constitute only 12% by weight and, until they settle and compact, perhaps 20% by volume; but people recognize plastics and blame them for a disproportionate share of our waste disposal problems.

The following methods have been proposed for dealing with plastics in household waste stream:

- Ban plastics outright.
- Bury them in landfills.
- Burn them in municipal incinerators.
- Pyrolyze them to industrial chemicals.
- Recycle them to useful products.

The first option is absurd but remains the avowed policy of some fringe environmental groups. Their strategy was to first ban chlorine, then plastics and solvents, as stated by Joe Thornton of Greenpeace as cited in *Science* magazine [*261*, 152-154 (1993)]. Responsible environmentalists, consumers and plastics producers may choose to dismiss these extremists, but should accept the burden of disposing of used plastics in an environmentally sound fashion.

Landfilling is out of fashion, but the shortage of landfill space is more a perception than reality in most countries. The raw materials for plastics came from the ground and can be returned to the ground without grave environmental consequences. Plastics are essentially inert. In landfills, they behave much like sand. They cause no leachate problems and remain available for future mining operations if the price of oil should rise dramatically. Other than actual recycling, landfilling is, in our judgment, the best option for plastics disposal.

Incineration is the favored disposal option in Japan and much of Europe. The United States fears air pollution. Even completely clean combustion will produce carbon dioxide which is the primary greenhouse-effect gas. Burning will reclaim some energy, but far less than the energy used in manufacturing the plastics. To make on kilogram of plastics, it takes the energy equivalent of three to four kilograms of crude oil pumped from the ground. It seems a shame to burn plastics if their inherent energy content can somehow be recaptured.

Pyrolysis is a process for decomposing plastics, in the absence of air, into usable gases, oils,

and coke. It has been a favored option of the large plastics companies in the United States. They favored it because it is different from the politically incorrect options of landfilling and incineration yet does not generate products that will compete with virgin polymers. The economics are terrible as is the energy efficiency. Those readers familiar with the petrochemical industry will recognize that cracking natural gas liquid is easier than cracking naptha, that cracking crude is not fully commercial and that cracking plastics is an abomination. Better they be burned!

Plastics recycling can take two forms: the reclaimed plastics can be used for applications not typical of virgin plastics or they can replace virgin plastics. The first form has not been an economic success, although new, high-value applications may yet be found. The second form is the only valid one for an environmentalist. Recycled plastics must displace virgin polymers. To do this they must have properties which closely approach those of virgin polymers and have prices less than those of virgin polymers. This has proven a difficult but not impossible goal.

The required characteristics for a recycled plastic are the following:

- The individual plastics should be sorted according to type, e.g., polystyrene, low density polyethylene, high density polyethylene, polypropylene, polyvinyl chloride and polyethylene terephthalate.
- They should be free from dirt.
- They should be free from point-to-point variations in molecular weight.
- The average molecular weight should be controllable.
- The polymer should be free from pigments and dyes.
- To the extent that the above desirata are not achieved, the cost, relative to virgin, must be low enough to compensate.

The first point, sorting, is vital and has received most emphasis. Hand sorting remains the rule, since the economics of machine sorting are poor. Hand sorting uses subsidized or disadvantaged labor in the first world countries. It is common in third world countries where most household trash is gleaned by the poor. Developing countries, such as Korea, seem to have been spared the indignity of sorting trash.

Hand or machine sorting cannot eliminate dirt or point-to-point variations and thus gives products of low quality compared to the virgin plastics. A new technique, selective dissolution, developed at Rensselaer Polytechnic Institute, achieves good sorting, removes dirt and produces a homogeneous product. It does so at a cost projected to be less than half that of the virgin polymers. Possible process improvements include depigmentation and control of average molecular weight. Thus the goal of near virgin properties at less than virgin prices seems achievable. The environmentalist will have the satisfaction of knowing that each kilogram of recycled plastic saves several kilograms of crude oil. The economist will know that recycling saves foreign exchange. The consumer will have the same convenient packaging at the same cost. Some plastics producers will lose market share. Others will benefit.

9.2

ILSI Europe
Report Series

PACKAGING MATERIALS: 3. POLYPROPYLENE AS A PACKAGING MATERIAL FOR FOODS AND BEVERAGES

ILSI
International Life Sciences Institute

REPORT

Prepared under the responsibility of the
ILSI Europe Packaging Material Task Force

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ILSI Press
One Thomas Circle, NW
Ninth Floor
Washington DC 20005-5802
USA
Tel: (+1) 202 659 0074
Fax: (+1) 202 659 3859

ILSI Europe
Avenue E. Mounier 83, Box 6
B-1200 Brussels
Belgium
Tel: (+32) 2 771 00 14
Fax: (+32) 2 762 00 44

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ILSI Europe Packaging Material Task Force, 83 Avenue E. Mounier, Box 6, B-1200, Brussels, Belgium.



PACKAGING MATERIALS: 3. POLYPROPYLENE AS A PACKAGING MATERIAL FOR FOODS AND BEVERAGES

by Philip Tice

REPORT

PREPARED UNDER THE RESPONSIBILITY OF THE ILSI EUROPE PACKAGING MATERIAL TASK FORCE

July 2002

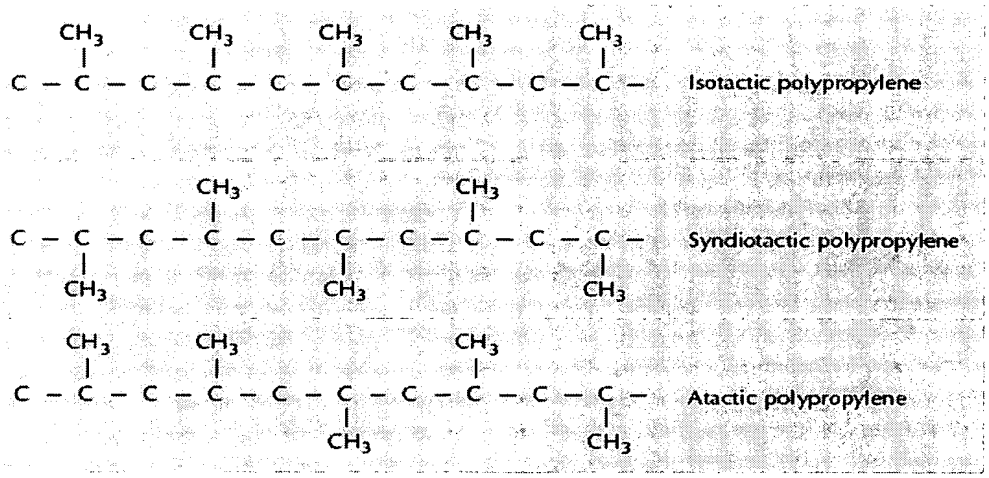
WHAT IS POLYPROPYLENE?

Polypropylene (PP) is a member of the polyolefin class of polymers. These polymers are derived from olefin monomers (unsaturated hydrocarbons); ethylene is the monomer for polyethylene. Polypropylene plastics began to find commercial applications in the 1950s. Thermoplastics based on polypropylene are now second in commercial importance only to those based on polyethylenes. World production of polypropylene reached 30 million tonnes in 2000 and is likely to increase with new production capacity (Robinson, 2001).

Unlike polyethylene, polypropylene has three basic polymeric forms: isotactic, syndiotactic and atactic. These different polymeric forms arise because, compared to the starting substance for polyethylene $CH_2{=}CH_2$ (ethene), the starting substance propylene $CH_3{\bullet}CH{=}CH_2$ (propene), has a methyl (CH_3) group in place of a hydrogen. In the isotactic form of polypropylene the methyl group has the same configuration at each tertiary carbon atom along the polymer chain. In the syndiotactic form, the methyl group alters position on alternative tertiary carbon atoms. In the atactic form, the methyl group takes up random positions on the tertiary carbon atoms.

Schematic illustrations of the three polymer forms are given in Figure 1. The polymer chains are actually helical and with the isotactic form the methyl groups all point outwards.

Figure 1. Schematic illustrations of the three polymeric forms of polypropylene



Commercial propylene homo-polymers are primarily isotactic with ≤5% of the atactic form and are high-molecular-weight semi-crystalline solids. Impact strength (toughness) is moderate, but tensile strength and stiffness are excellent. It is the semi-crystalline nature as well as the other properties that make the isotactic form the most suitable as a commercial plastic for food packaging and other applications.

Improvements in impact strength of isotactic polypropylene are obtained by co-polymerising with ethylene and/or 1-butene (typically 1%–7%), which produces random co-polymers. These co-polymers are relatively transparent but have lowered melting points, with reduced stiffness and tensile strengths. Commercial propylene homo-polymer can become rather brittle at sub-zero temperatures. The propylene-ethylene co-polymers are less brittle at low temperatures.

Blending of commercial propylene homo-polymer with propylene-ethylene co-polymers also is used to modify and improve the physical properties of tensile strength and toughness.

Syndiotactic propylene polymers are less crystalline. They have found only limited use, mainly as elastomers.

The atactic form of polypropylene, which is amorphous and tacky, is used as a hot-melt adhesive but has few other applications.

Other properties of commercial propylene homo-polymer include low water vapour transmissions, medium gas permeability, good resistance to solvents, good resistance to grease/oils and chemicals, good abrasion resistance, good gloss and high clarity in oriented (stretched) film form. In recent years clarity of polypropylene plastics in non-oriented (un-stretched) thicker forms, such as those used for pots and containers, has been improved with developments in manufacturing processes.

Propylene homo-polymers and the co-polymers are prone to oxidative degradation, particularly at the elevated temperatures used for processing. The formulations of all commercial polypropylene plastics therefore, contain effective antioxidants (*see Basic Chemistry section*). Oxidation causes polypropylene to break down to lower-molecular-weight products.

Plastics formulated from propylene homo-polymer and the co-polymers can be processed by all the common plastic manufacturing processes: blow moulding, injection moulding, thermo-forming and film formation, both cast and oriented. Co-polymers with ethylene are usually preferred for injection moulding and blow moulding. Melt-viscosity, which correlates with the weight-average molecular weight of the polymer, is used to select the grade appropriate for the specific process. Standardised melt-flow rate (MFR) tests are normally used to provide the information. Polymer grades with low MFR values (high molecular weight) are used in sheet extrusion, for subsequent thermoforming processing and also for blow moulding. Films are manufactured from intermediate grades, and grades with the higher MFR values are used for injection moulding (Brady and Marsh, 1997; Parker, 1997; Robertson, 1992).

9.3

(next five pages)

C A R E
CONSORTIUM FOR AUTOMOTIVE RECYCLING

The Consortium for Automotive Recycling and The British Plastics Federation

Recycled Plastic Specification - Generic Family A : Polypropylene

Reference: CARE/BPF/PP001

Scope:

This specification is intended to provide base requirements for plastics, containing post-consumer derived recyclate, which has the potential to be used in automotive or similar quality oriented engineering applications. It is indicative of the performance and quality demanded within the automotive sector which, in turn, reflects the environmental extremes encountered by materials used in vehicles constructed for use in a global market.

Material Description:

Polypropylene (PP) containing 40% talc (mineral) filler. The polymer content should contain a minimum of 25% post consumer sourced recyclate.

Typical applications:

Air cleaner housings.
Lighting units.
Air conditioning unit housings

The applications are primarily underbonnet locations which require stability of the material at elevated temperatures.

Colour and Appearance:

The material supplied should be in a pellet form and be black in colour. It should be free from any objectionable odour and free of any excessive visible inclusions.

Material Performance / Properties:

The following criteria should be regarded as a minimum set of data to be submitted to the 'customer' as an initial qualification prior to any final approval process.
Tests should be conducted on standard moulded test pieces (where applicable) that have been conditioned prior determining the particular parameter.

Compiled by: Derek Wilkins, CARE Group UK (EMail : derek.wilkins@rovergroup.com)

Material Properties:

Typical Property	Method	Units	Value*	Range
Melt Flow Index @ 230 C.	ISO 1133	g/10min	15	12 - 18
Ash content @ 550 C for 30 min	ISO 3451/1. Method A	%	37	37 - 40
Specific Gravity	ISO 1183/A	g/cm3	1.25	1.2 - 1.25
Flexural Modulus @ 23 C	ISO 178	MPa	4300	3500 (min)
Flexural Modulus @ 140 C	ISO 178	MPa	300	250 (min)
Flexural Yield Strength @ 23 C	ISO 178	MPa	47	40 - 50
Flexural Yield Strength @ 140 C	ISO 178	MPA	6	5 - 10
Tensile Strength @ yield @ 23 C	ISO 178	MPa	28	22 - 25
Tensile Strength @ Yield @ 120 C	ASTM D638	MPa	7.5	
Tensile Strength @ Yield @ 140 C	ASTM D638	MPA	3.3	
Tensile Strength at Maximum Load	ISO R527	MPa		24 (min)
Elongation @ Yield @ 23 C	ISO R527	%	8	5- 10
Elongation @ Yield @ 140 C	ASTM D638	%	8	
Elongation @ Break @ 23 C	ISO R527	%	8	8 (min)
Elongation @ Break @ 140 C	ASTM D368	%	>150	
Notched Izod Impact Strength @ 23 C	ISO R180/A	KJ/m2	2.3	2 (min)
Notched Izod Impact Strength @ 10 C	ISO R180/A	KJ/m2	2.1	1.6(min)
Notched Izod Impact Strength @ -20 C	ISO R180/A	KJ/m2	2	1.5 (min)
Notched Izod Impact Strength @ -40 C	ISO R180/A	KJ/m2	2	1.4 (min)
Heat Distortion Temperature	ISO 75/ 0.47MPa	C	137	118 (min)
Heat Distortion Temperature	ISO 75/ 1.81MPa	C	80	67 (min)
Coefficient of linear thermal expansion	ASTM D696	per 1C	5.6 x 10-5	
Flammability	ISO 3795	mm/min	81	100(max)
Mould Shrinkage (48hrs @ 23 C)	ISO 2577	%	1	0.5 - 0.9
Mould Shrinkage (48hrs @ 80 C)	ISO 2577	%	0.21	0 - 0.15
Mould Shrinkage (30 mins @ 120 C)	ISO 2577	%	0.46	0.1 - 0.3
Hardness, Durometer D	ISO 868	No	71	68 (min)

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Fog number (passenger compartment applications)	SAE J1756	No	50	90 (min)

Properties after heat ageing at:				
500 hours at 140 C (engine bay use)				
Tensile strength change	*ISO R527*	*%*	*5*	*+/- 15*
Impact strength, Izod change	*ISOR180/A*	*%*	*5*	*+/- 15*
500 hours at 120 C (non engine bay use				
Tensile strength change	*ISO R527*	*%*	*5*	*+/- 15*
Impact strength, Izod change	*ISOR180/A*	*%*	*5*	*+/- 15*

Restricted contaminants		*Value**	*Range*
Antimony	*Sb*	*2 ppm*	*<5 ppm*
Arsenic	*As*	*4 ppm*	*<5 ppm*
Chromium	*Cr*	*3 ppm*	*<25 ppm*
Cadmium	*Cd*	*14 ppm*	*<100 ppm*
Lead	*Pb*	*15 ppm*	*<100 ppm*
Mercury	*Hg*	*<1 ppm*	*<1 ppm*
Halogens (combined value)	*Cl, Br,F,I*	*20 ppm*	*<50 ppm*

Thermal Analysis:

In addition to the above data a Shear Modulus Vs Temperature curve shall be obtained (using a Dynamic Mechanical Analysis Technique) between -50 C and +160 C. Subsequent batches should not deviate by more than +/- 10% of the original curve. The curves being generated on similar equipment using a standard heating rate (and the appropriate DIN Specification. *Ref to be included*)

Infra Red Analysis:

Each batch of material should be accompanied by a 'fingerprint' trace derived from an infra red spectrophotometry scan. No significant deviations from the original curve should be observed.

Health and Safety:

All grades of material should be accompanied by the necessary Health and Safety Handling Data Sheet and Environmental Impact Assessment.

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** Indicative values. Refer to customer for specific limits and / or the legislative requirements applicable at that time.*

Storage and Handling:

Non-toxic, chemically inert material.
Store in a dry, ventilated area away from direct sunlight exposure.
This product is insoluble in all common solvents at room temperature.
Drying of the granules (80°C to 90°C for 3 to 4 hours) before moulding is recommended.

Typical processing conditions:

Melt temperature range	200°C - 250°C	
Mould temperature range	30°C - 50°C	
Back pressure	Low	*Adjust pressure and times to fill and pack properly.*
Screw speed	Low - Medium	
Fill speed	Low - Medium	

Explanatory notes on the test parameters requested:

Melt Flow Index:
An inverse measure of molecular weight. i.e. an increase in molecular weight results in a decrease in melt flow index. Indicative of degradation. Key characteristic when setting mould flow conditions.

Ash content:
Needs to be kept within close tolerance limits. Effects stiffness (modulus) and vibration characteristics.

Specific Gravity:
Important parameter for weight calculations.

*Temperature ranges:
Strength and stiffness measurements are determined at typically two temperature extremes e.g. 23°C and 140°C. This is to assess the performance of the material in, for example, an engine bay application where temperatures up to 140°C can be experienced.

Flexural modulus*:
Is a key measure of stiffness. Components made from this material must remain rigid and dimensionally stable. The measure will also give some indication as to the materials' vibration / damping characteristics, which is significant when considering the resonant effects of an air filter for example.

Tensile strength*:

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Used to quantify the mechanical strength, and in combination with the elongation data, the toughness of a material.

Other tensile properties including elongation at yield and at break:
These parameters are usually determined within the same test protocol as the tensile strength. When the results are combined they give an overall assessment that the material is strong enough and tough enough to do the job required.

Notched Izod Impact Strength:
Most commonly employed method used to determine resistance of plastic materials to withstand impact. Conducted at a range of temperatures between ambient and -40°C to reflect the most vulnerable circumstances to which a component can be exposed i.e. cold climate.

Heat Distortion Temperature:
Used to determine if the material will distort under load at elevated temperature. It can also indicate the presence of significant levels of polyethylene (contamination) by lowering the HDT and having an increase in impact performance. The material must not distort excessively under load.

Coefficient of linear thermal expansion:
Components often fit in close proximity to or in direct contact with other components. Excessive expansion / contraction under extreme environmental conditions can give rise to squeaks, rattles and distortion (load) effects.

Flammability:
Legislative requirement to minimise fire risk potential.

Mould shrinkage:
Although dependent on the actual component design and moulding conditions, Mould shrinkage variations have often been cited as a problem with recycled material. Determination of this parameter will go some way to achieving a satisfactory confidence level.

Hardness:
More applicable to interior 'visual' components but a simple test worth quoting.

Fog number:
A test that will determine volatile material within the compound. A low volatility is required to ensure no potential Health and Safety issues arise from volatile species. The test originated in determining the potential to fog (re-condense) on the interior of a vehicle windscreen.

Heat ageing:
Ensures that the potential for degradation of the polymer in service is minimal. The compound should be stable and not undergo any structural change during the life of the vehicle.

9.4

(Emphasis added)

Recyclable Materials

RECYCLING TUBS & LIDS - 1994

Background

When the Recycling industry refers to tub & lids, they are referring to margarine, ice cream or other dairy containers and their lids (not including milk jugs) . These "tub" containers are made of either Polypropylene (PP) or High Density Polyethylene (HDPE). Lids are made of Low Density Polyethylene.

In Ontario, very few municipalities representing about 398,000 households, collect these containers for recycling. In 1993, 253 tonnes were given to markets. The end markets are companies that manufacture plastic lumber. Most municipalities have decided against the addition of these materials in their program because, with $0 revenue, it is far too costly.

Polymers Differences

Tubs & lids require "injection moulding" in the manufacturing process of the container. Injection moulding needs a polymer with a low molecular weight. Low molecular weight resins have a low viscosity. "Viscosity" refers to the property of "staying together" when heat is applied. Low viscosity resins for injection moulding turn into a water like substance with the application of heat.

Bottles are "blow moulded". Blow moulding is when molten plastic (high viscosity, forming a "mud like" substance) is forced under pressure through a nozzle to form a tube, and then blown with air to form a bottle. (a similar process to blowing glass.)

Recycling Tubs & Lids

To ensure recycled resin quality when recycling plastic, it is crucial that resin types with different molecular structures or viscosities not be mixed. For example HDPE bottles & HDPE tubs cannot be mixed. Similarly, LDPE lids & LDPE film cannot be mixed. Therefore materials must be separated by viscosity.

Markets for Mixed Tubs & Lids

Research is being done to find new markets for mixed tubs & lids. Presently the only market for these mixed resins are companies that make artificial lumber. By adding 25% of this mixed resin to virgin HDPE, the plastic formed, can be applied to the manufacturing of creates, pallets or there similar products. A task force made up primarily of the plastics industry is presently identifying the potential applications for this mixed resin. Presently, milk crates, and three types of pallets are being tested by industry. Also, University of Toronto is researching the application of tubs & lids in "Polythalt" (plastic in asphalt as a patching material). "Polythalt" requires a low molecular weight, and unlike regular asphalt prevents coal cracking and rutting.

Markets for Separated Tubs & Lids

There is a market for separated tubs & lids. These separated resins could sell for about $150.00/tonne if the buyer can rely on good quality & large quantities.

In Ontario most plastic sorting is done manually and therefore very expensive. To sort three new plastic types (HDPE & PP tubs & LDPE lids) that are difficult to optically identify, when quantities recovered are small, is economically inefficient.

As well, the end-user requires a steady large supply of the material in order to pay a good price for the material. For example, Resource Plastics in Brampton, requires at least 1 tonne/hour of a resin type to ensure economic sustainability. The secondary tub & lid supply from Ontario residents, cannot satisfy the demand from the end-markets.

Developments in B.C.

Tubs & Lids

Similar to Ontario, EPIC has funded a local pilot project aimed at demonstrating the feasibility of recycling mixed PP & HDPE tubs for the application of milk crates for the dairy industry. According to the ministry, the first tests were not conclusive, and a second study is presently being done.
HDPE Colour Resin

The B.C. ministry has made it clear that a move to "colour out" for detergent bottles would improve economics. Recently, however, the market price for coloured HDPE bottles has increased to $150.00/tonne, resulting in a slow down in the "colour out" discussions.

Contacts for information on market development for Tubs & Lids

Fred Edgecomb. (416) 449-3444 Environmental & Plastics Institute of Canada (EPIC)
Jim Horn (519) 574-1574 Resource Plastics
Renie D'Aquila (604) 683-6009 Recycling Council of B.C. (RCBC)
Dave Brown (604) 387-9986 Ministry of the Environment for B.C., Municipal Solid Waste Division

The Recycling Council of Ontario's e-mail address is: **rco@rco.on.ca**.

Back to RCO Factsheets page.

10. RELATED PROCEEDINGS APPENDIX

The following documents, issued during the litigation referred to in Paragraph 2, above, may be considered relevant to the issues raised in the present appeal.

10.1 Memorandum of the Court as to a Markman Hearing, U.S. District Court for the Middle District of Tennessee, Nashville Division, docket no. 3:03-cv-00848, document 453, 12 September 2005.

10.2 Memorandum of the Court as to Summary Judgment, U.S. District Court for the Middle District of Tennessee, Nashville Division, docket no. 3:03-cv-00848, document 450, 12 September 2005.

OIPE IAP11 JUN 29 2006 PATENT & TRADEMARK OFFICE

10.1

IN THE UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF TENNESSEE
NASHVILLE DIVISION

E.I. DU PONT DE NEMOURS AND COMPANY	)	
v.	)	NO. 3:03-848
	)	JUDGE CAMPBELL
CARDINAL HEALTH, INC., ET AL	)	

MEMORANDUM

The Court held a Markman hearing on August 2, 2005. Plaintiff E.I. Du Pont De Nemours and Company ("Dupont") asserts that Defendants BBA U.S. Holdings, Inc. and BBA Nonwovens Simpsonville, Inc. (collectively "BBA") have infringed a patent owned by Dupont. The patent at issue is U.S. Patent No. 5,885,909 (the "'909 Patent"). The Court construes the disputed claim terms of the '909 Patent as set forth herein.

BACKGROUND FACTS

The '909 Patent issued on March 23, 1999 and relates to a nonwoven fabric that is both breathable while having excellent liquid barrier properties and is commonly used in medical applications such as surgical drapes and gowns (Docket No. 174, Ex. 1). Dupont asserts that BBA sells a fabric that it manufactures for Cardinal Health 200, Inc. ("Cardinal') which infringes Claim 64 of the '909 Patent (Docket No. 171 at 10). Claim 64 is a dependent claim and depends from either independent Claim 4 or 5 of the '909 Patent (Docket No. 171 at 10). The BBA product that Dupont accuses of infringement is a custom product that BBA makes for Cardinal. Cardinal uses the custom fabric to make surgical gowns (Docket No. 176 at 7).

Dependent Claim 64 of the '909 Patent reads as follows:

Claim 64:

The sheet material according to any of Claims 1, 3, 4, 5, 6, and 7 wherein the material has

a cross sectional void percentage of at least about 85 percent.

Independent Claims 4 and 5 of the '909 Patent read as follows:

Claim 4:

A flexible sheet material having a Frazier permeability of at least about 15 m3/min-m2 and a hydrostatic head of at least about 40 cm.

Claim 5:

A flexible sheet material having a combination of Frazier permeability and hydrostatic head properties selected from the group of:

a Frazier permeability of at least 70 m3/min-m2 and an unsupported hydrostatic head of at least about 15 cm;

a Frazier permeability of at least 28 m3/min-m2 and an unsupported hydrostatic head of at least about 30cm;

a Frazier permeability of at least 15 m3/min-m2 and an unsupported hydrostatic head of at least about 40 cm; and

a Frazier permeability of at least 1 m3/min-m2 and an unsupported hydrostatic head of at least about 80 cm.

(Docket No. 174, Ex. 1).

The following are the disputed claim terms of the '909 Patent and the parties proposed construction thereof:

1. FLEXIBLE SHEET MATERIAL.

Dupont's proposed construction: "A broad, relatively thin surface, layer or covering that is capable of being easily bent without rupturing or breaking."

(Docket No. 171 at 26).

BBA's and Cardinal's proposed construction: "A single sheet of material that is easily bent, It cannot cover a multi-layer composite such as SMS."

(Docket No. 176 at 11, Docket No. 317).

2. FRAZIER PERMEABILITY.

Dupont's proposed construction: "A measurement of the ease with which air passes through material (based upon the rate of flow of air per unit area of fabric) at a specified pressure drop, typically performed according to ASTM D737 and IST 70.1, which are substantially similar standards."

(Docket No. 171 at 26).

BBA's and Cardinal's proposed construction: BBA and Cardinal assert that the term "Frazier permeability" is indefinite. In the alternative, BBA and Cardinal argue for a construction of the term as requiring "the accused product to meet the claimed measurement under all test protocols while using all test instruments."

(Docket No. 176 at 11 and 16, Docket No. 318 at 11 and Docket No. 170).

3. HYDROSTATIC HEAD.

Dupont's proposed construction: "A measurement of the resistance of fabrics to the penetration of water under hydrostatic pressure, typically performed according to AATCC 127, IST 80.4, and IST 80.6, which are substantially similar standards."

(Docket No. 171 at 26).

BBA's and Cardinal's proposed construction: BBA and Cardinal assert that the term "Hydrostatic Head" is indefinite. In the alternative, BBA and Cardinal argue for a construction

of the claim limitation as referring to "all test instruments using all test protocols."

(Docket No. 176 at 17-18, Docket No. 170).

4. AT LEAST ABOUT.

Dupont's proposed construction: Dupont has adopted BBA's and Cardinal's alternative proposed construction of "at least .05 below the claimed number."(Docket No. 370).

BBA's and Cardinal's proposed construction: BBA and Cardinal asserts the term "At least about" is indefinite. In the alternative, BBA and Cardinal argue for a construction of the term as follows: "At least .05 below the claimed number."

(Docket No. 176 at 18-21 and Docket No. 170).

5. CROSS-SECTIONAL VOID PERCENTAGE.

Dupont's proposed construction: "A measurement of the porosity of a cross section (i.e., a cutting or piece cut off at right angles to an axis) of the material, equal to the volume of voids (or air space) in the cross section of the material structure divided by the total volume of the cross section of the material and multiplied by 100.

(Docket No. 171 at 27).

BBA's and Cardinal's proposed construction: BBA and Cardinal both assert that the term "cross-sectional void percentage" is indefinite, but agree with Dupont about what the plain meaning of the phrase means.

(Docket No. 176 at 24 and Docket No. 170).

ANALYSIS

A determination of patent infringement is a two step analysis. First, the scope and meaning of the asserted claims are determined. Cybor Corp. v. FAS Technologies, Inc., 138 F.

3d 1448, 1454 (Fed. Cir. 1998) (citing Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S. Ct. 1384, 134 L. Ed. 2d 577 (1996)). Next, the construed claims are compared to the allegedly infringing device. Id. Claim construction is a matter of law for the Court to decide. Id.

"It is a 'bedrock principle' of patent law that 'claims of a patent define the invention to which the patentee is entitled the right to exclude.'" Phillips v. AWH Corp., 415 F. 3d 1303, 1312 (Fed. Cir. 2005) (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc., 381 F. 3d 1111, 1116 (Fed. Cir. 2004). Generally, words in a claim are given their ordinary and customary meaning. Vitronics v. Conceptronic, Inc., 90 F. 3d 1576, 1582. The ordinary and customary meaning of a claim term is the meaning that would be attributed to those words by persons skilled in the relevant art in question at the time of the invention. Innova, 381 F. 3d at 1116. In some instances, the ordinary and customary meaning of a claim term is readily understood, and "claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." Phillips, 415 F. 3d at 1314, (quoting Brown v. 3M, 265 F. 3d 1349, 1352 (Fed. Cir. 2001). "In such circumstances, general purpose dictionaries may be helpful." Id. Many times, however, understanding the ordinary and customary meaning of the claim term in a field of art requires more elaborate interpretation. Id.

In interpreting a claim term, the Court may consider both intrinsic and extrinsic evidence. Vitronics, 90 F. 3d at 1582. Generally, the best sources available to the public to show what a person of skill in the art would have understood the disputed claim terms to mean "include the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and

the state of the art." Phillips, 415 F. 3d at 1314 (internal quotations and citations omitted).

In determining proper construction of claim terms, the Court should look to the words of the claims, both asserted and non-asserted, to define the scope of the patented invention. Vitronics, 90 F. 3d at 1582. The claims also must be construed in a manner consistent with the specification. Phillips, 415 F. 3d at 1315. The specification is highly relevant, usually dispositive to the meaning of a disputed term. Vitronics, 90 F. 3d at 1582. "The pertinence of the specification to claim construction is reinforced by the manner in which a patent is issued." Phillips, 415 F. 3d at 1316. The Patent and Trademark Office determines the scope of the claims of a patent by "giving claims their broadest reasonable construction 'in light of the specification as it would be interpreted by one of ordinary skill in the art.'" Id. (quoting Am. Acad. of Sci. Tech. Ctr., 367 F. 3d 1359, 1364 (Fed. Cir. 2004). A patentee also may choose to act as his own lexicographer and use terms in a manner other than their ordinary meaning. Vitronics, 90 F. 3d at 1582. To that end, the specification may reveal a special definition of a claim term that differs from the meaning it would ordinarily possess Id. In addition, "it is entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims." Id. "A construction that excludes a preferred embodiment 'is rarely, if ever, correct.'" C.R. Bard, Inc. v. U.S. Surgical Corp., 388 F. 3d 858, 866 (Fed. Cir. 2004) (quoting Vitronics, 90 F. 3d at 1582). Finally, the Court may consider the prosecution history of the patent itself to assist it in its determination. Vitronics, 90 F. 3d at 1582. Extrinsic evidence may always be considered to assist in an understanding of the underlying technology; provided, however, extrinsic evidence may never be used to vary or contradict the terms of a claim Interactive Gift Exp., Inc. v. Compuserve, Inc., 256 F. 3d 1323,

1332 (Fed. Cir. 2001). "Within the class of extrinsic evidence, technical dictionaries and treatises may be useful in claim construction." Phillips, 415 F. 3d at 1318 (citing Renishaw PLC v. Marposs Societa' per Azioni, 158 F. 3d 1243 (Fed. Cir. 1998). In addition, "Extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." Id.

At the Markman hearing and in their briefs, the parties presented the claims, the specifications, the preferred embodiments, prosecution history, and expert proof to support their respective construction of the disputed claim terms.

The Court construes the disputed claim terms as follows:

1. FLEXIBLE SHEET MATERIAL.

Central to the dispute between the parties over the proper construction of the claim term "flexible sheet material" is whether the term encompasses a type of multi-layer non-woven material referred to as SMS. There is no dispute over the term "flexible", as both parties agree that "flexible" means capable of being easily bent.

Nonwoven fabrics have been available since the early 1900's and can be made in a number of different ways (Docket No. 176, Declaration of Carl Palenske at 5). Nonwoven fabrics can be engineered to have a wide variety of properties (Docket No. 176, Declaration of Carl Palenske at 5). SMS is used in the industry to indicate a type of nonwoven material that is a type of composite material having excellent barrier protection properties as well as breathability.

The composite material of SMS is formed of different layers. Different polymers are used to make the different layers (Docket No. 176, Declaration of Carl Palenske at 7). The initials "SMS" are used in the industry to describe the layers that form this type of composite material, with the "S" identifying "spunbond" layers and the "M" standing for a "meltblown" sheet (Docket No. 176, Declaration of Carl Palenske at 7). Spunbonded and meltblown are common methods of producing nonwoven fabrics (Docket No. 176, Declaration of Carl Palenske at 5). Spunbond nonwovens are formed by starting with a raw polymer that is extruded through small holes in the spunbond equipment into long, thin, continuous fibers. The fibers are then drawn or stretched until they thin out to a desired diameter. The spunbond equipment then deposits the extruded fibers onto a moving conveyor belt and where they collect in the form of a web. (Docket No. 176, Declaration of Carl Palenske at 5). To make a meltblown nonwoven, polymers are extruded into a high velocity airstream after leaving a spinneret. Air scatters the molten strands randomly and solidifies them as they are deposited onto a moving conveyor belt (Docket No. 176, Declaration of Carl Palenske at 6).

In support of their construction, BBA and Cardinal argue that the '909 Patent describes two methods of making a single sheet of nonwoven material made of a single fiber type which by itself, and without any additional nonwoven layers such as the layers in SMS fabrics, has a high level of both liquid impermeability and air permeability. More specifically, BBA and Cardinal asserts that each method described in the '909 Patent creates a single sheet comprising a single web of fibers, and, thus, the term "flexible sheet material" cannot include a laminated multi-layer product such as SMS.

Dupont, on the other hand, asserts that the specification of the '909 Patent indicates that

the term "flexible sheet material" includes multi-layer sheet materials, including SMS fabrics. Dupont also asserts that this construction of the term is support by the extrinsic record.

The Court finds that the plain language of the '909 Patent indicates that it is directed at an improvement over nonwoven SMS fabric and does not encompass SMS fabric. Disputed Claim 64 of the '909 Patent discloses a "sheet material", and Independent Claims 4 and 5 from which Claim 64 depends disclose a "flexible sheet material" (Docket No. 174, Ex. 1, Col. 10 at lines 42-57 and Col. 13 at lines 25-27). When read in light of the specification, it is apparent that the term "flexible sheet material" is an improved nonwoven structure composed of layers of fibers described as "meltspun" nonwoven fibers (Docket No. 174, Ex. 1, Col. 2, Lines 23 and 31).

The Background of the Invention provides some guidance as to the improved art of the '909 Patent. The Background of the Invention cites to composite or laminated products, such as SMS, as an example of prior art technology for making nonwoven fabrics (Docket No. 174, Ex. 1, Col. 1 at lines 45-49). The Background of the Invention indicates that prior art patents, U.S. Patent Nos. 4,622,259 and 4,908,163, are directed at attempts to make an improvement over SMS technology by making better melt-blown fibers with improved tensile properties (Docket No. 174, Ex. 1, Col. 1 at lines 60-64). The Background of the Invention also states that it is an object of the present invention to provide a further improved nonwoven structure that has a balance of properties that are better suited to barrier end uses, i.e., more substantial barrier and breathability properties compared to currently known barrier materials (Docket No. 174, Ex. 1, Col 1 at line 65-67 and Col. 2 at lines 1-4). Thus, the Background of the Invention makes clear that the invention of the '909 Patent is directed toward an improvement over the meltblown

fibers of prior art.

The Summary of the Invention further clarifies the object of the invention of the '909 Patent. The Summary of the Invention reflects that the invention "comprises a flexible sheet material comprised of meltspun nonwoven fibers" ... "wherein substantially all of the fibers are continuous meltspun fibers" (Docket No. 174, Ex. 1, Col. 2 at lines 22-31). Thus, the Summary of the Invention indicates that the improved art of the '909 Patent is a single sheet material referred to as "meltspun nonwoven fibers", and not a composite product.

The Detailed Description of the Preferred Embodiments further describes the fiber of the inventive fabric as "a small denier poly-metic fiber which forms numerous, but very small pores." (Docket No. 174, Ex. 1, Col. 3 at lines 57-59). The Detailed Description is careful to state that "putting small denier fiber in a fabric to obtain high barrier is generally known in the art and is not new." The Detailed Description indicates that what is new about the subject invention is the use of hard yarn "meltspun" microfibers which when used to create a nonwoven fibrous structure, result in a fabric which has an extraordinarily high Frazier permeability and sufficient strength to form a barrier fabric without the need for any type of supporting scrim (Docket No. 174, Ex. 1, Col. 3 at lines 60-64 and 65-67 and Col. 4 at line 1). The Detailed Description is also careful to disclaim application of SMS fabric to the present invention. The Detailed Description states that "the fiber strength of the present invention will accommodate most applications without reinforcement such as the meltblown layer in SMS." (Docket No. 174, Ex. 1, Col. 5 at 62-64). Thus, the Detailed Description indicates that the '909 Patent improves on attempts of prior art to increase the strength of a single sheet of nonwoven fabric.

This interpretation of the claimed invention as a single fiber sheet material is further

supported by the Detailed Description wherein an advantage of the present invention is described as the creation of a material which is recyclable as constituted of a single polymer as opposed to other materials which are combinations of dissimilar polymers (Docket No. 174, Ex. 1, Col 9 at lines 24-30). While this embodiment is only one of several, there is nothing in the language of the claims or the specification to indicate that the invention covers a non-woven material comprised of several different fibers as asserted by Dupont. Although in Claim 25 of the '909 Patent the sheet material of Claims 4 and 5 is referred to as sheet material "comprised of fibers, and at least a portion of the fibers are formed of at least two separate component polymers," it is clear from the specifications that the use of separate component polymers in Claim 25 does not describe a sheet material composed of separate layers of fibers formed from different polymers (Docket No. 174, Ex. 1 Col. 11 at lines 54-57). Rather, the specification makes clear that reference to component polymers means bi-component or multi-component fibers with sheath/core arrangements or blends composed of a variety of polymers or co-polymers (Docket No. 174, Ex. 1 Co. 6 at lines 24-29, Col. 9 at lines 47-67, Col. 10 at lines 1-33 and Col. 11 at lines 54-57).

Thus, the Court finds that the term "flexible sheet material" when read in light of the specifications, does not cover SMS fabrics. Such a finding is apparent from the invention of the '909 Patent as consistently described throughout the specification as a single sheet material composed of "meltspun" nonwoven fibers. Accordingly, the Court construes the term "Flexible Sheet Material" as "a single sheet of material that is easily bent composed of non woven meltspun fibers."

2. FRAZIER PERMEABILITY.

The parties also dispute whether the term "Frazier permeability" as found in Claims 4 and 5 is indefinite. "Frazier permeability" refers to an air permeability test or the measure of the air permeability of the fabric at issue (Docket No. 176 at 11, Docket No. 324 at 9). Dupont argues that the law does not require the '909 Patent to specify a particular standard for measuring "Frazier permeability" so long as a person of ordinary skill in the art would know which standard to use. Dupont further argues that a person of ordinary skill in the art in 1999 would use the ASTM D737 or IST 70.1 test methods to measure "Frazier permeability". BBA and Cardinal, on the other hand, assert that reference to "Frazier" in the claims does not identify a test method by which the measurement can be made or a test instrument with which to take the test.

A determination of indefiniteness is a matter of law for the Court as part of the claims construction process. Howmedica Osteonics Corp. v. Tranquil Prospects, Ltd., 401 F. 3d 1367, 1371 (Fed. Cir. 2005) (citing 35 U.S.C. §112, para.2 (1982)). A determination of indefiniteness depends on whether "one skilled in the art would understand the bounds of the claim when read in light of the specification." Id. "The perspective of a person of ordinary skill in the art at the time of the patent application governs the definiteness analysis." Id. (citing W.L. Gore & Assocs. Inc. v. Garlock, Inc., 721 F. 2d 1540, 1556-57 (Fed. Cir. 1983)). A patent claim is indefinite if "its legal scope is not clear enough that a person of ordinary skill in the art could determine whether a particular [product of method] infringes or not." Id. (citing Geneva Pharms., Inc. v. Glaxosmithkline PLC, 349 F. 3d 1373, 1384 (Fed. Cir. 2003)). A claim term is indefinite "only if the claim is insolubly ambiguous and no narrowing construction can properly be adopted." Honeywell Int'l, Inc. v ITC, 341 F. 3d 1332, 1338-1339 (Fed. Cir. 2003) (internal quotations and citations omitted)).

In the present case, the evidence before the Court indicates that the test method for determining "Frazier permeability" can be determined with reference to prior art. Prior art can often help demonstrate how a disputed term is used by those skilled in the art. Vitronics, 90 F. 3d at 1584 (A court in its discretion may admit and rely on prior art proffered by one of the parties, whether or not cited in the specification or the file history, to demonstrate how a disputed term is used by those skilled in the art.) This is especially appropriate, where, as in the present case, five of the patents identified in the prosecution history of the '909 Patent, U.S. Patent Nos. 4,622,259, 4,908,163, 4,442,161, 4,499,139, and 5,308,691, define "Frasier permeability", and a stated object of the invention is to provide a further improvement of two of the so identified patents. In all of the cited prior art references, "Frazier permeability" is defined with reference to test standards ASTM D737 and IST 70.1 (Docket No. 174, Ex. 2 at p. 89, Col. 3, lines 63-68; p. 100, Col. 3, lines 64-67; p. 114, Col. 6, lines 44-46; p. 123, Col. 5, lines 14-18; p. 133, Col. 5, line 16). Furthermore, the expert witness proof presented in the case supports construction of the term "Frazier permeability" with reference to tests conducted pursuant to either ASTM D737 or IST 70.1 (Docket No.174. Ex. 4 at 63-64. Ex. 5 at 115-16, 158, and Docket No. 173 at 6). Finally, with respect to BBA and Cardinal's arguments that the term "Frasier permeability" is indefinite because there are a number of different test instruments that can measure "Frasier permeability", the evidence before the Court shows that the standards identified by Dupont do not require the use of a particular instrument (Docket No. 173 at 7). Accordingly, the Court construes the term "Frasier permeability" as "a measurement of the ease with which air passes through material (based upon the rate of flow of air per unit area of fabric) at a specified pressure drop, typically performed according to ASTM D737 and IST 70.1."

3. HYDROSTATIC HEAD.

Similarly, the parties dispute construction of the term "Hydrostatic Head". Dupont argues the term is capable of construction with reference to industry standards, and BBA and Cardinal argue that the term is indefinite for failure to identify a test method and a test instrument. Again, the Court finds that the term "Hydrostatic Head" can be defined with reference to the prior art identified in the prosecution history of the '909 Patent. A number of prior art patents found in the prosecution history of the '909 Patent refer to the test for "Hydrostatic Head" as conducted pursuant to test standard AATCC 127 (Docket No. 173 at 8). In addition, the proof of the expert witnesses presented by Dupont support a definition of "Hydrostatic Head" in line with the testing methods contained in the prior art references. Similarly, as with BBA's and Cardinal's argument that the term is indefinite because there are a number of different test instruments available to measure "Hydrostatic Head", the proof before the Court indicates that it is the test method chosen and not the equipment used which determines whether a piece of fabric falls within the claims of the '909 Patent (Docket No. 176, Declaration of Palenske at 11). Accordingly, the Court construes the term "Hydrostatic Head" to mean "a measurement of the resistance of fabrics to the penetration of water under hydrostatic pressure, typically performed according to AATCC 127, IST 80.4, and IST 80.6."

4. AT LEAST ABOUT.

The parties also dispute construction of the claim term "at least about". BBA and Cardinal assert that this term is insolubly ambiguous. In the alternative, BBA and Cardinal offer a construction of the term "at least about 15" as meaning "at least 14.95", "at least about 80" as meaning "at least 79.95", and "at least about 85" as meaning "at least about 84.95". Dupont does

not oppose BBA's and Cardinal's alternative proposed construction of "at least about".

Under Federal Circuit precedent, the ordinary meaning of the term "about" has been found to mean "approximately" or with some approach to exactness in quantity, number or time. Merck & Co., Inc. v. Teva Pharms, USA, Inc., 395 F. 3d 1364, 1369-70 (Fed. Cir. 2005); Conopco, Inc. v. May Dep't Stores Co., 46 F. 3d 1556, 1561 (Fed. Cir. 1994). In addition, the relevant dictionary definition of the term "about" indicates that the common usage of the term means "approximately", "almost" or "nearly". Webster's Third New International Dictionary, 5 (1993). There is nothing in the written description of the '909 Patent or the claim terms themselves to indicate that the patentee of the '909 Patent intended to redefine or use the term "at least about" differently from its ordinary meaning. The patentee uses the term "about" to reasonably describe the test results for "Frazier Permeability" and "Hydrostatic Head" in relationship to a specific numerical result. Given the use of the term "about" consistent with Federal circuit precedent and the common usage dictionary definition, and the parties agreement over the alternative construction advanced by BBA and Cardinal, the Court construes the term "at least about" to mean "at least .05 below the claimed number."

5. CROSS SECTIONAL VOID PERCENTAGE.

Finally, the parties dispute whether the term "cross sectional void percentage" is indefinite or whether the term is capable of construction. Dupont argues that the concept of measuring void percentage in fabric is well known to one of skill in the art. More specifically, Dupont asserts that cross sectional void percentage is a measurement of the porosity of a fabric by looking at the volume of "voids" (lack of fabric) compared to the volume of the entire fabric. Dupont also asserts that the language "cross sectional" merely refers to the fact that the void

percentage of a cross-section of fabric is being analyzed, versus the entire fabric. BBA and Cardinal, on the other hand, assert that while the parties agree about what the plain language of the term "cross sectional void percentage" means, the term has no meaning in the field. In addition, BBA and Cardinal argue that there are no published test methods for determining "cross sectional void percentage" and a person of ordinary skill in the art would not know whether to include the "bond points" of the fabric when calculating "cross sectional void percentage". Furthermore, BBA and Cardinal argue there is no test method for determining the term "void percentage" by itself.

The Court finds that while BBA and Cardinal may be correct in their assertion that there is no published method for determining cross sectional void percentage, this is not conclusive of whether the term is capable of construction. The '909 Patent itself supplies various examples of the subject invention reflecting values for void percentage thus giving one skilled in the art instruction on how to calculate void percentage (Docket No. 174, Ex. 1, Col. 6 at lines 39-66). In addition, the expert proof presented by Dupont indicates that measuring void percentage is well known to one of skill in the art and is merely a calculation that can be performed based upon measurements and data, such as the thickness of the fabric and the density of the material (Docket No. 173 at 10, Docket No. 174, Ex. 4 at 346-349). This expert proof also indicates that a person of ordinary skill in the art would know how to calculate cross-sectional void percentage from the examples of data set forth in the '909 Patent which shows percentage voids in relationship to the basis weight, thickness and density of various nonwoven samples, and that a person of ordinary skill in the art would understand that bond points in nonwoven fabrics are irrelevant to the calculation (Docket No. 325, Ex. A and E). There has been no showing that this

expert proof contradicts or does not support the examples of void percentage reflected in the '909 Patent. Furthermore, additional support is given to Dupont's proposed construction given the plain meaning of the term "cross section" which by its relevant general purpose definition means "a cutting or section across; a section at right angles to especially the longer axis of anything; a piece of something cut off in a direction at right angles to an axis." Webster's Third New International Dictionary, 543 (1993). Finally, the parties agreement over the plain meaning of the term militates against a finding that the term is insolubly ambiguous.

Thus, the Court declines to find the claim term "cross sectional void percentage" insolubly ambiguous. Accordingly, the Court construes the term "cross sectional void percentage" as meaning, "a measure of the porosity of a cross section (i.e., a cutting or piece cut off at right angles to an axis) of the material, equal to the volume of voids (or air space) in the cross section of the material structure divided by the total volume of the cross section of the material and multiplied by 100."

IT IS SO ORDERED.

Todd Campbell

TODD J. CAMPBELL
UNITED STATES DISTRICT JUDGE

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10.2

IN THE UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF TENNESSEE
NASHVILLE DIVISION

E.I. DU PONT DE NEMOURS AND COMPANY	)	
v.	)	NO. 3:03-848
	)	JUDGE CAMPBELL
CARDINAL HEALTH, INC., ET AL	)	

MEMORANDUM

Pending before the Court is Defendants BBA U.S. Holdings, Inc. and BBA Nonwovens Simpsonville, Inc.'s Motion for Summary Judgment Concerning Dupont's Patent Infringement Allegations (Docket No. 357). For the reasons stated herein, Defendants' Motion (Docket No. 357) is GRANTED and all patent claims are dismissed.

Also pending before the Court is Dupont's Motion to Strike or, in the Alternative, Dupont's Motion for Leave to File a Surreply to BBA's Reply Brief in Support of its Motion for Summary Judgment (Docket No. 436). Dupont's Motion to Strike (Docket No. 436) is DENIED. Dupont's Motion for Leave to File Surreply (Docket No. 436) is GRANTED and the Clerk is directed to file Dupont's Surreply.

BACKGROUND FACTS

Plaintiff E.I. Du Pont De Nemours and Company ("Dupont") asserts that Defendants BBA U.S. Holdings, Inc. and BBA Nonwovens Simpsonville, Inc. (collectively "BBA") have infringed a patent owned by Dupont. The patent at issue is U.S. Patent No. 5,885,909 (the "'909 Patent") which issued on March 23, 1999 (Docket No. 174, Ex. 1). The '909 Patent relates to a nonwoven fabric that is both breathable while having excellent liquid barrier properties and is commonly used in medical applications such as surgical drapes and gowns (Docket No. 174, Ex. 1). Dupont asserts that BBA sells a fabric that it manufactures for Cardinal Health 200, Inc.

("Cardinal') which infringes Claim 64 of the '909 Patent (Docket No. 171 at 10).[1] The BBA product that Dupont accuses of infringement is a custom product that BBA makes for Cardinal. Cardinal uses the custom fabric to make surgical gowns and drapes (Docket No. 390 at 1-2 and Docket No. 176 at 7).

Dependent Claim 64 of the '909 Patent reads as follows:

Claim 64:

The sheet material according to any of Claims 1, 3, 4, 5, 6, and 7 wherein the material has a cross sectional void percentage of at least about 85 percent.

Independent Claims 4 and 5 of the '909 Patent read as follows:

Claim 4:

A flexible sheet material having a Frazier permeability of at least about 15 m3/min-m2 and a hydrostatic head of at least about 40 cm.

Claim 5:

A flexible sheet material having a combination of Frazier permeability and hydrostatic head properties selected from the group of:

a Frazier permeability of at least 70 m3/min-m2 and an unsupported hydrostatic head of at least about 15 cm;

a Frazier permeability of at least 28 m3/min-m2 and an unsupported hydrostatic head of at least about 30cm;

a Frazier permeability of at least 15 m3/min-m2 and an unsupported hydrostatic head of

[1]Claim 64 is a dependent claim that depends from either independent Claim 4 or 5 of the '909 Patent (Docket No. 171 at 10).

at least about 40 cm; and

a Frazier permeability of at least 1 m3/min-m2 and an unsupported hydrostatic head of at least about 80 cm.

(Docket No. 174, Ex. 1).

The parties dispute the following terms of the '909 Patent: 1) "Flexible Sheet Material"; 2) "Frasier Permeability"; 3) " Hydrostatic Head"; 4) "At Least About"; and 5) "Cross-Sectional Void Percentage".

By contemporaneous Order and Memorandum, the Court construed the disputed claim terms of the '909 Patent as follows:

1. "Flexible Sheet Material": as "a single sheet of material that is easily bent composed of nonwoven meltspun fibers."

2. "Frasier Permeability": as "a measurement of the ease with which air passes through material (based upon the rate of flow of air per unit area of fabric) at a specified pressure drop, typically performed according to ASTM D737 and IST 70.1."

3. "Hydrostatic Head": as "a measurement of the resistance of fabrics to the penetration of water under hydrostatic pressure, typically performed according to AATCC 127, IST 80.4, and IST 80.6."

4. "At Least About": as "at least .05 below the claimed number."

5. "Cross-Sectional Void Percentage": as "a measure of the porosity of a cross section (i.e., a cutting or piece cut off at right angles to an axis) of the material, equal to the volume of voids (or air space) in the cross section of the material structure divided by the total volume of the cross section of the material and multiplied by 100."

BBA has filed a motion for summary judgment (Docket No. 357) of non-infringement, both literal and under the doctrine of equivalents, and for invalidity, either under the theory of indefiniteness or anticipation.

SUMMARY JUDGMENT

Summary judgment "shall be rendered forthwith if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); Meyers v. Columbia/HCA Healthcare Corp., 341 F.3d 461, 466 (6th Cir. 2003). In deciding a motion for summary judgment, the court must view the factual evidence and draw all reasonable inferences in favor of the nonmoving party. Id.; Hopson v. DaimlerChrysler Corp., 306 F.3d 427, 432 (6th Cir. 2002).

To prevail, the non-movant must produce specific evidence that demonstrates there is a genuine issue of material fact for trial. Meyers, 341 F.3d at 466. A mere scintilla of evidence is insufficient; there must be evidence on which the jury could reasonably find for the non-movant. Id. The non-moving party may not rest on mere allegations but must set forth specific facts showing that there is a genuine issue for trial. Hopson, 306 F.3d at 432.

ANALYSIS

"'A determination of infringement is a two-step process. The court must first correctly construe the asserted claims, and then compare the properly construed claims to the allegedly infringing devices, systems, or methods.'" Seachange Int'l, Inc. v. C-Cor, Inc., 413 F. 3d 1361, 1377 (Fed. Cir. 2005) (quoting NTP, Inc. v. Research In Motion, Ltd., 392 F. 3d 1336, 1358 (Fed. Cir. 2004), overruled on other grounds by, NTP, Inc. v. Research In Motion, Ltd., ____ F.

3d ___ (Fed. Cir. 2005)). "'To prove infringement, the patentee must show that the accused devices meets each claim limitation either literally or under the doctrine of equivalents.'" Id. (quoting Catalina Mktg. Int'l v. Coolsavings.com, Inc., 289 F. 3d 801, 807-08 (Fed. Cir. 2002)). Proof of literal infringement requires proof that "the accused device contains every limitation of the asserted claims." Riles v. Shell Exploration and Production Co., 298 F. 3d 1302, 1308 (Fed. Cir. 2002) (quoting Mas-Hamilton Group v. LaGard, Inc., 156 F. 3d 1206, 1211, 48 USPQ2d 1010, 1014-15 (Fed. Cir. 1998)). Proof of infringement under the doctrine of equivalents requires proof that the accused device contains an equivalent for each limitation not literally satisfied. Catalina Mktg. Int'l, 289 F. 3d at 812 (citing Dawn Equipment Co. v. Kentucky Farms, 140 F. 3d 1009, 1015, 46 USPQ2d 1109, 1113 (Fed. Cir. 1998)). A determination of infringement, whether literal or under the doctrine of equivalents, is a questions of fact. Boss Control, Inc. v. Bombardier, Inc., 410 F. 3d 1372, 1376 (Fed. Cir. 2005) (quoting Bai v. L&L Wings, Inc., 160 F. 3d 1350, 1353 (Fed. Cir. 1998)).

In support of its motion, BBA asserts that the claims of the '909 Patent do not cover the nonwoven fabric that it manufactures for Cardinal. More specifically, BBA asserts that its nonwoven fabric is a type of nonwoven material commonly referred to in the industry as SMS and that the invention of the '909 Patent is not directed toward SMS. SMS is used in the industry to indicate a type of nonwoven material that is a composite material having excellent barrier protection properties as well as breathability. The composite material of SMS is formed of different layers and different polymers are used to make the different layers (Docket No. 176, Declaration of Carl Palenske at 7). The parties do not dispute that the fabric manufactured by BBA is a composite SMS fabric (Docket No. 382 at 7).

In its earlier Memorandum, the Court found that the "flexible sheet material" of the '909 Patent was a nonwoven material composed of layers of meltspun fibers and did not cover the composite material of SMS. Thus, in light of the parties' agreement that the accused product is a composite SMS fabric, the claims of the '909 Patent, including disputed Claim 64, do not cover BBA's accused product, whether under a theory of literal infringement or under the doctrine of equivalents.

Accordingly, BBA's motion for summary judgment (Docket No. 358) is GRANTED. Given the Court's ruling, the Court declines to address BBA's remaining issues relating to indefiniteness, anticipation and invalidity of the '909 Patent.

IT IS SO ORDERED.

Todd Campbell

TODD J. CAMPBELL
UNITED STATES DISTRICT JUDGE

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